

REMARKS

Amendments

Claim 1 has been amended to recite that the charge control adjuvant that is an acid or a base is added as an ingredient separate from the toner particles. Additionally, the action of depletion of the positively charged toner particles during the printing operation, as opposed to all of the liquid toner composition, is clarified. Antecedent basis for the amendment related to provision of the charge control adjuvant as an ingredient separate from the toner particles is located throughout the specification, particularly at page 9, lines 6-8 and lines 16-27, where the operation of the charge control adjuvant by coordination with counterions at large in the toner composition is posited, and where having a charge control adjuvant having limited solubility in the toner composition being in contact with the toner compositions is discussed. Additionally, the separate addition of the charge control adjuvant as an ingredient separate from the toner particles is demonstrated in the examples, where control liquid toner compositions are first prepared, and the charge control adjuvant is simply added to the already prepared control liquid toner compositions. The action of depletion of the positively charged toner particles during the printing operation is described at page 11, lines 16-17.

These amendments are presented to address objections newly raised in the Final Office Action to claims as amended in response to the first Office Action. These amendments therefore could not have been earlier presented, and are timely. It is respectfully submitted that the present amendments do not raise new matter, and place the application in immediate condition for allowance. Entry and favorable consideration of these amendments is therefore earnestly solicited.

Interview Summary

The Examiner is thanked for courtesies extended in granting a telephone interview in the above captioned application held December 15, 2005. In this interview, the proposed amendment and distinctions of the invention in view of the prior art were discussed.

Claim Rejections – 35 USC § 112

Claims 1-21 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

S/N 10/676,371

Page 6 of 10

The claims have been rejected to as being unclear as to "toner" being depleted, and also being unclear as to which printing operation is to be carried out in the claims.

The claims have been amended to clarify that it is the toner particles that are depleted from the toner composition. It is respectfully submitted that this rejection has been obviated. Additionally, because the nature of that which is being removed from the toner composition has been clarified, the printing operation also is clarified because the printing operation relates to any operation in which a liquid toner composition is depleted of toner particles.

Reconsideration and withdrawal of the outstanding rejections is therefore requested.

Claim Rejections – 35 USC § 103

Claims 1, 6, 7, 10-16, and 18-21 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in US Patent 3,753,760 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-255.

The present invention describes providing an element to the toner composition in addition to the charge director (i.e. in addition to the component that provides a charge to the particle). This additional element is not present to charge the particle, but instead is present to provide exceptional charge control benefits to the toner composition. It has surprisingly been found that by addition of acid or base components to positively charged toner particles as described in the present specification, bulk conductivity and preferably charge per mass are reduced during printing operations, providing superior imaging performance. As noted in the specification at page 9, lines 2-13, it is believed that the adjuvant as described in the specification and claims selectively coordinates with counterions in the toner composition, possibly including counterions previously associated with the charge directors that are associated with the toner particles. Surprisingly, the charge control adjuvant reduces the bulk conductivity of the liquid toner composition and preferably simultaneously reduces the charge per mass of the toner particles. This charge effect, both in bulk conductivity and preferably in charge per mass, is of particular benefit during printing operations, providing an excellent charge balance in the toner system even as toner concentrations change as toner particles are depleted.

Kosel discloses liquid toners prepared using amphipathic copolymers. Kosel does disclose the use of charge directors (in particular, metal soaps), as is conventional in the toner art. Kosel does not teach or suggest the use of an additional element in the toner composition that is an acid or base, present in an amount to effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations.

S/N 10/676,371

Page 7 of 10

Diamond and Weiss is a handbook that teaches the use of conventional materials for liquid toners, including the use of charge directors. This reference thus clearly describes only the use of a charge director to impart a charge on the particle, and does not teach or suggest the use of an element in addition to a charge director that is a charge control adjuvant that is an acid or a base present in an amount effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations.

Thus, even in combination, the Kosel and the Diamond and Weiss references both teach the use of charge directors to impart a charge to toner particles, and individually and in combination fail teach the use of a charge control adjuvant that is an acid or a base present in an amount effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations.

Claim 17 has been rejected under 35 U.S.C. (103(a) as being unpatentable over Kosel in U.S. Patent 3,753,760 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-255 as applied in claims 1, 6, 7, 10-16, and 18-21 above, and further in view of Roteman et al. in US Patent 3,411,936. Roteman is cited for its teaching regarding the use of specific chemicals as charge directors.

Claim 17 is directed to preferred embodiments of the present invention wherein the charge director is specified. As discussed above, the charge director is a distinct element from the charge control adjuvant.

It is acknowledged that tin and zirconium carboxylates are known in the toner art for their use as charge directors. The subject claim recites these compounds in their use as charge directors. However, claim 17 is patentable because it claims the use of these charge directors in toners comprising amphipathic copolymers, and additionally wherein the toner composition comprises a distinctly separate charge control adjuvant that is an acid or a base present in an amount effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations.

Because the Roteman patent does not bridge the gap noted above in the Kosel and Diamond and Weiss references relative to the charge control adjuvant, it is respectfully submitted that claim 17 is also allowable.

S/N 10/676,371

Page 8 of 10

Claims 1, 6, 7-16, and 18-21 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kosel in U.S. patent 3,753,760 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-255 as applied in claims 1, 6, 7, 10-16, and 18-21 above, and further in view Tamai et al in U.S. Patent 4,062,789.

The Tamai reference is cited for its recitation of certain acids in toner particles. The Tamai reference does not use the now conventional "charge director" nomenclature, and so one must look to the nature of the use of the materials described in Tamai to determine their function in the toner compositions described therein. The acid as disclosed in Tamai is the material used to impart a charge to the toner particle. See column 3, lines 1-4. This portion of Tamai only provides teaching relative to liquid toners that use specific compounds as what we now call "charge directors."

Tamai additionally notes that an organic acid can optionally be incorporated to preserve stability of certain charge controlling agents in the carrier liquid. See column 3 at lines 36-39 and 53-57. Thus, these acids appear to act as a sort of solubilizer for the charge controlling agent, and additionally can strengthen the positive charge of the toner particles. See column 3, lines 48-51. The Tamai patent does not teach or suggest the use of a distinctly separate charge control adjuvant that is an acid or a base present in an amount effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations.

Because the Tamai patent does not bridge the gap noted above in the Kosel and Diamond and Weiss references relative to the charge control adjuvant, it is respectfully submitted that claims 1, 6, 7-16, and 18-21 are allowable over this combination of references as well. .

Claims 1, 6, 7, and 10-21 have been rejected to under 35 U.S.C.(a) as being unpatentable over Qian et al in U.S. Patent Application Publication 2004/0091807 or Qian et al in U.S. Patent Application Publication 2004/0091809 in view of *Handbook of Imaging Materials* to Diamond & Weiss (eds.) New York: Marcel-Dekker, Inc. (11/2001) pp. 242-247, 254-257.

Each of the Qian references describes liquid toner compositions comprising particles made incorporating amphipathic copolymers. The copolymers of Qian '807 comprise soluble high Tg monomers, the copolymers of Qian '808 comprise crystallizable moieties, and the copolymers of

S/N 10/676,371

Page 9 of 10

Qian '809 have a Tg greater than 55°C at the D material portion thereof. These toner compositions use conventional charge director chemistry as discussed above, and, as acknowledged in the Office Action, do not use a distinctly separate charge control adjuvant that is an acid or a base present in an amount effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations.

As discussed above, the Diamond and Weiss handbook teaches only the use of conventional materials for liquid toners, including the use of charge directors. This reference does not teach or suggest the use of an element in addition to a charge director that is a charge control adjuvant that is an acid or a base present in an amount effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations.

Because none of the above cited references teach or suggest the concept of a charge control adjuvant that is an acid or a base in a liquid toner composition in an amount effective to reduce the bulk conductivity of the liquid toner composition as toner particles are depleted during printing operations, the combination of these references do not render the present claims obvious.

Supplemental Information Disclosure Statement

Finally, Applicants wish to note that a Supplemental Information Disclosure Statement ("SIDS") has been recently filed in the present application, which cites art that was recently cited in a foreign patent office. Note that the cited art is Korean patent literature: Korean document number 1999-63760 dated 26/07/1999 to Baker, et al, which is the Korean counterpart to WO 97/12285 and Korean document number 10-190747, dated 21/01/1999 to Elmasry, which is the Korean counterpart to US 5,066,559.

It is respectfully submitted that the present claims are patentable thereover.

S/N 10/676,371

Page 10 of 10

CONCLUSION

In view of the above amendment and remarks, it is respectfully submitted that the foregoing is fully responsive to the outstanding Office action. In the event that a phone conference between the Examiner and the Applicant's undersigned attorney would help resolve any issues in the application, the Examiner is invited to contact said attorney at (651) 275-9811.

Dated: December 19, 2005

Respectfully Submitted,

By: 

Dale A. Bjorkman, Reg. No. 33,084

Customer No.: 33072

Phone: 651-275-9811

Facsimile: 651-351-2954

22964